Strategic Plan for CBRNE Equipment Standards

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Project Overview

- Introduction & Update
- Purpose & Priorities
- Goals & Objectives
- Preparation Phase
- Implementation Phase
- Organization & Responsibilities
- Current Standards Efforts
- Conclusions

Introduction and Overview

- Members of the Standards Coordination Committee (SCC)
  - NFPA, NIOSH, NIST, FEMA, OSHA, EPA,
  - DOE, ANSI, SBCCOM, FBI, DoD
- Relationship to other projects
- High-level timing goals - MOU, IA

PURPOSE & PRIORITIES

- To develop a suite of standards for minimum performance, commonality and interoperability of Chemical/Biological/ Radiological/Nuclear (CBRN) equipment utilized by the first responders to acts of terrorism
- Present the strategy and process within the IAB SCC for identifying, adopting, modifying, and developing CBRN equipment standards
- Does not address the specifics of schedules, resources, or those standardization processes that are agency-specific

PURPOSE & PRIORITIES

- Priority order for development of CBRN standards
  - ➔ respiratory protection equipment
  - ➔ personal protective equipment
  - ➔ communications equipment
  - ➔ decontamination equipment
  - ➔ detection equipment
  - ➔ medical equipment

GOALS & OBJECTIVES

- **GOAL**
  - Suite of standards
  - Facilitate informed procurement to users, manufacturers, developers, and test/ evaluation community to ensure product compliance

GOALS & OBJECTIVES

- **OBJECTIVE**
  - 1. Not reinvent work previously done

    or
  - 2. Provide redundant products

    However will take advantage of all available information and standards that are applicable

OVERVIEW of the PROCESS

- **PREPARATION PHASE**
- **IMPLEMENTATION PHASE**

PREPARATION PHASE

- Evaluate existing standards to see:
  - A. If existing standards can be adopted into the suite of CBRN standards
  - B. If standards need to be modified before being adopted
  - C. If new standards need to be developed

PREPARATION PHASE

- SCC requires key equipment subgroups to ID standards and/or test protocols for equipment in their commodity area
- Subgroups must evaluate their applicable standards to assess adequacy, need for modification, gaps and conflicts

Continued

PREPARATION PHASE

- Part of the preparation phase also includes:
  - I.D. of the Threat
  - I.D. of Operational Requirements
    - Input from the User Community
    - Agreement by the NFPA TCC and other standards groups to provide assistance
    - Survey & assessment of existing standards

IMPLEMENTATION PHASE

- Incorporate work from subgroups by:
  - 1. Adopting existing standards
  - 2. Coordinating the modification of standards within SRO's, SEO's, & SDO's.
  - 3. Developing new standards

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IMPLEMENTATION PHASE

- SCC has a methodology for reviewing standards within the suite:
  - Typically within a 5 year cycle
  - Reaffirm applicable standards and disseminate to local,state & federal public safety and health communities
  - Recall obsolete standards

Continued

IMPLEMENTATION PHASE

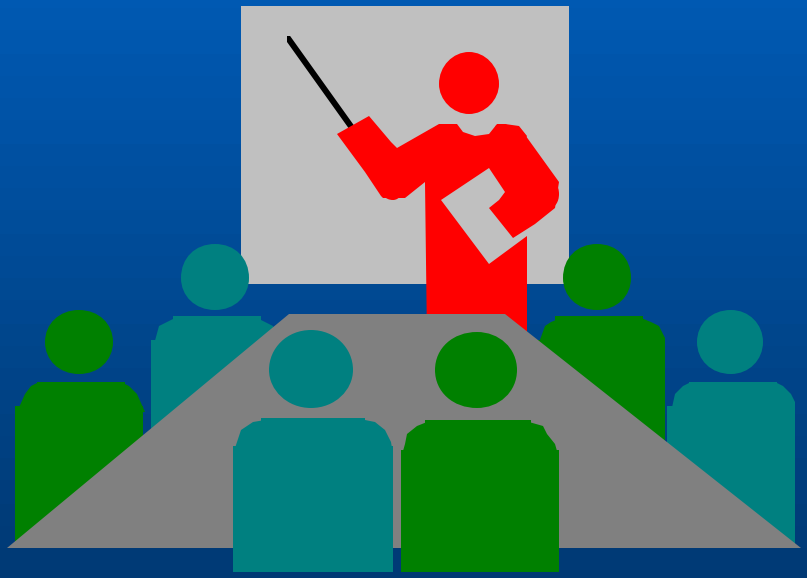
- Interim Steps:
  - First Responder equipment compendium set of guides by NIST/OLES
    - Will catalogue existing CBRN equipment, their characteristics, and contain test data where found
    - Of necessity; interim voluntary standards/or comparative evaluation protocols for testing of CBRN equipment

IMPLEMENTATION PHASE

- NIST/OLES Compendium Guides
  - Chemical Detection Guide - issued
  - Biological Guide - in process
  - Decontamination Guide - in process
  - PPE Guide - in process
  - Communications Guide - in process

STANDARDS COORDINATION COMMITTEE (SCC)

- NIST/OLES serves as “Executive Agent” for the SCC Suite of Standards
- Following Organizations: NIOSH, OSHA, EPA, NFPA NIST/OLES,ANSI, SBCCOM, CHPPM, DOE, IAFF, IAFC, IACP,FBI.
- Chair of each Commodity Subgroup



STANDARDS COORDINATION COMMITTEE (SCC)

- FUNCTIONS of SCC
  - Facilitate Standards Suite development
  - Alert subgroups & request reconciliation when contradictory
  - Alert subgroups when proposed requirements are contradictory to Federal and State Regulations
  - Raise attention to similar or additional requirements under internal development within SDO’s, SRO’s, and SEO’s.
  - Provide technical and non-technical advice

SUBGROUPS

- Roles:
  - Subject Matter Experts (Users)
  - Maintain and Update Equipment Lists
  - Provide input to Chair in order that they may bring it forward to the SCC
  - Address ways and means by which technology can support WMD Response

STANDARDS RELATED ORGANIZATIONS

- Key Organizations (for PPE):
  - U.S. Army Soldier Biological and Chemical Command (SBCCOM)
  - National Institute for Occupational Safety and Health (NIOSH)
  - National Institute for Standards and Technology - Office of Law Enforcement (NIST/OLES)

STANDARDS DEVELOPMENT ORGANIZATIONS

- Key Organizations (for PPE):
  - American Society for Testing and Materials (**ASTM**) F23 Committee on Protective Clothing
  - International Standards Organization (**ISO**) TC94 SC14 on Firefighter PPE
  - National Fire Protection Association (**NFPA**) Project on Fire and Emergency Services Protective Clothing & Equipment

NFPA STANDARDS PROCESS

- Organized by technical committees; coordination through Technical Correlating Committee (TCC)
- Committee membership limited; balanced among interest groups
- 2 Phases for public input: proposals and comments
- Approval process: generally 2 1/2 years

RELEVANT NFPA STANDARDS

- **NFPA 1994:** Protective Ensemble for Chemical/Biological Terrorism Incidents
- **NFPA 1951:** Protective Ensemble for USAR Operations
- **NFPA 1999:** Protective Clothing for Emergency Medical Operations
- **NFPA 1981:** Open-circuit, Self-contained Breathing Apparatus

NFPA 1994 (Ensembles for Chemical/ Biological Terrorism Protection)

- Standard address counter-terrorism responses
- 3 separate classes of ensembles
- Key tests
  - Overall SF_6 challenge; integrity evaluations
  - Testing against terrorism agents
- Many tests similar to NFPA 1991 and 1992 (chemical clothing standards)

NFPA 1994 Performance Classes

Class	Challenge	Skin Contact	Vapor Threat	Liquid Threat
1	Vapors Aerosols Pathogens	Not permitted	Unknown Not verified	High
2	Limited vapors Liquid splash Aerosols Pathogens	Not probable	IDLH	Moderate
3	Liquid drops Pathogens	Not likely	STEL	Low to none

NFPA 1994 Requirements

Class	Integrity	Permeation	Viral Penetration
1	Gas-tight SF_6 (0.02%)	Gas (100%) Liquid (full) Agent (100 g/m^2)	No
2	SF_6 (2.0%) Liquid-tight	Gas (1000 ppm) Liquid (10 g/m^2) Agent (10 g/m^2)	YES
3	Liquid-tight (limited)	Liquid (10 g/m^2) Agent (10 g/m^2)	YES

NFPA 1994 Test Chemicals

Type	Chemical
Chemical Agent	Distilled sulfur mustard (HD) Lewisite (L) Sarin (GB) V-agent (VX)
Industrial (liquid)	Dimethyl sulfate (DMA)
Industrial (gas)	Ammonia Chlorine Cyanogen chloride (CK) Carbonyl chloride (CG) Hydrogen cyanide (AC)

NFPA 1951 (USAR Ensembles)

- Ensembles provide physical protection, protection from liquids (chemicals and bloodborne pathogens) with limited heat and flame protection
- Covers garments, helmets, gloves, and footwear
- Similar to turnout clothing without lining, but with high comfort requirements

NFPA 1999 (EMS PPE)

- Specific protection from blood and body fluids containing liquidborne pathogens
- Currently addresses garments, gloves, and face protection; new revision to include footwear, footwear covers, cleaning gloves, and work gloves
- Principal requirements: viral penetration resistance and liquid integrity

NFPA 1981 (Open-Circuit SCBA)

- Prerequisite: SCBA certification by NIOSH to 42 CFR Part 84
- Requires positive pressure at breathing rate of 100 L/min, after various conditions (vibration, particulate, shock, heat/flame exposure)
- Includes testing of component materials for heat and flame resistance

OTHER NFPA EFFORTS

- New subcommittee on Electronic Safety Technologies for Fire and Emergency Services
  - Personal location devices
  - Environmental detection equipment
  - Personal physiological monitoring
  - General standards for equipment performance

ASTM STANDARDS PROCESS

- Committee F23 organized by subcommittees pertaining to specific hazards (e.g., chemical)
- Committee membership open; subject to balance
- Voting by ASTM Members only
- Approval process: varies, can be as short as 6 months

ASTM INITIATIVES

- Development of new standards
  - Specification for adsorbent-based clothing against chemical terrorism agents
  - Specification on clothing against biological terrorism
- Development of test methods for chemical/biological protection
  - Particulate and chemical challenges

ISO STANDARDS PROCESS

- ISO TC94/SC14: Newly formed subcommittee on firefighter PPE
  - Specific working groups on rescue and hazardous materials response
- Representation on national level; 1 vote per country (25 countries involved)
- All input through national delegation
- Approval process: generally 3 years

ISO INITIATIVES

- Proposed standards developments
  - Chemical protective clothing for hazardous materials response
  - Protective ensemble for rescue operations
- Overall product testing standard
  - Test methods to address overall barrier performance and ergonomics

CONCLUSIONS

- **General Discussion**
- **Questions and Answers**